

What is claimed is:

1. A channel data extracting circuit for
2 extracting data for each channel from a frame in which
3 byte data of channels are multiplexed, comprising:
4 Banyan means for distributing data for
5 respective channels by Banyan switches of planes
6 corresponding to the channels and sequentially aligning
7 word data; and
8 data control means for transmitting to said
9 Banyan means a control signal representing a channel to
10 which data belongs and controlling operations of the
11 Banyan switches.

2. A circuit according to claim 1, wherein each
2 of the Banyan switches has a plurality of
3 multistage-connected 2 x 2 switches.

3. A circuit according to claim 1, wherein the
2 Banyan switch sets data belonging to an own channel to
3 valid data and sequentially aligns only valid data, and
4 data belonging to another channel to invalid data.

4. A circuit according to claim 1, wherein
2 said channel data extracting circuit further
3 comprises packet detecting means for analyzing data
4 extracted for each channel to detect a boundary of a

5 packet inserted into a frame,
6 said data control means outputs a control
7 signal representing whether data is start data of a
8 packet, to said Banyan means on the basis of the
9 boundary of the packet detected by said packet detecting
10 means, and

11 said Banyan means outputs, in accordance with
12 the control signal from said data control means, start
13 data so as to be positioned at a start of word data
14 which constitutes a packet.

5. A circuit according to claim 4, wherein said
2 Banyan means inserts idle data after final data of a
3 packet so as to position start data of the packet at a
4 start of word data.

6. A circuit according to claim 1, further
2 comprising:
3 buffer means for holding data of respective
4 channels output from said Banyan means; and
5 data selecting means for sequentially reading
6 out and outputting the data held by said buffer means.

7. An STM/Packet hybrid switch comprising:
2 an STM switch for performing switching
3 processing of an STM frame; and
4 a packet switch having a channel data

5 extracting circuit for extracting data of respective
6 channels from a frame in which byte data of channels are
7 multiplexed, said packet switch having a Banyan unit for
8 distributing data for respective channels by Banyan
9 switches of planes corresponding to the channels and
10 sequentially aligning word data, and a data control unit
11 for transmitting to the Banyan unit a control signal
12 representing a channel to which data belongs and
13 controlling operations of the Banyan switches,
14 wherein said 2 x 2 switches fragment for
15 respective channels an STM frame received from said STM
16 switch, and then performs switching processing for each
17 packet.

8. A channel data extracting method of extracting
2 data for each channel from a frame in which byte data of
3 channels are multiplexed, comprising the steps of:
4 generating a control signal representing a
5 channel to which data belongs; and
6 distributing data for respective channels by
7 Banyan switches of planes corresponding to the channels
8 in accordance with the generated control signal, and
9 sequentially aligning word data.

9. A method according to claim 8, wherein each of
2 the Banyan switches has a plurality of
3 multistage-connected 2 x 2 switches.

10. A method according to claim 8, wherein the
2 distributing step comprises the steps of:
3 setting data belonging to an own channel to
4 valid data;
5 setting data belonging to another channel to
6 invalid data; and
7 sequentially aligning only valid data by the
8 Banyan switches.

11. A method according to claim 8, further
2 comprising the steps of:
3 analyzing data extracted for respective
4 channels to detect a boundary of a packet inserted into
5 a frame,
6 generating based on the detected boundary of
7 the packet a control signal representing whether data is
8 start data of a packet; and
9 outputting, in accordance with the generated
10 control signal, start data so as to be positioned at a
11 start of word data which constitutes a packet.

12. A method according to claim 11, further
2 comprising the step of inserting idle data after final
3 data of a packet so as to position start data of the
4 packet at a start of word data.

13. A method according to claim 8, further
2 comprising the steps of:
3 holding data aligned for respective channels;
4 and
5 sequentially reading out and outputting the
6 held data.